THANKS FOR CHOOSING OUTPUT BUS KIT!

This manual will guide you through the build of Output Bus module. First of all, please take your time to inspect all parts involved and get familiar with what's ahead of you.

Some steps are not obvious, so even if you're an experienced DIYer please read the steps thoroughly before starting. **The fact that SMD components are pre-soldered does not mean this is an easy one**. Please Be careful and doublecheck all your steps.

HAVE FUN!

RESISTORS

Color code can be difficult to identify, we strongly recommend to use a **multimeter**.

Qty	Value	Code	Name on PCB
12	100k	Brown, black, black, orange, brown	R1, R2, R3, R4, R6, R10, R11, R12, R14, R15, R18, R24
6	20k	Red, black, black, red, brown	R7, R13, R26, R32, R33, R35
4	6k8	Blue, gray, black, brown, brown	R29, R34, R36, R38
4	1k	Brown, black, black, brown, brown	R8, R9, R17, R22
4	75 R	Violet, green, black, gold, brown	R20, R21, R27, R28
2	68k	Blue, gray, black, red, brown	R19, R25
2	39k	Orange, white, black, red, brown	R23, R31
2	27k	Red, violet, black, red, brown	R30, R37
2	18k	Brown, gray, black, red, brown	R5, R16

DIODES

Solder the diodes **observing their polarity**. The black or white line on the diode must match with the white line on the diode symbol on the PCB silkscreen.

Qty	Value	Name on PCB
8	1N4148	D1, D2, D3, D4, D5, D6, D9, D10
2	1N5817 (black)	D7, D8

FERRITE

To solder the two ferrite beads use a recycled resistor leg passed through each ferrite and proceed as if it were a resistor. Ferrite beads don't have polarity.

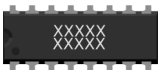
Qty	Name on PCB
2	FERRITE+-, FERRITE-+

CAPACITORS

Identifying capacitors can be quite tricky. Codes stated are indicative, please take a look at this guide for help identifying capacitors: http://www.wikihow.com/Read-a-Capacitor

Qty	Value	Code	Name on PCB
14	100n	104	C7, C8, C15, C17, C18, C19, C22, C23, C24, C27, C29, C30, C31, C34
8	10pF	10	C6, C9, C16, C20, C21, C25, C26, C32

ICs



Place the sockets (taking care to orientate them properly – the notch or dot on one end of the IC should match the image on the silkscreen) and solder them into their correct positions.

Place the ICs in their respective sockets taking note of their orientation – the notch or dot on the top of the IC must match that of the socket and silkscreen.

Qty	Value	Name on PCB
4	TL072	IC1, IC2, IC4, IC6
2	NE5532	IC3, IC5

ELECTROLYTIC CAPACITORS

Values are written on the side of the capacitor. Mind their polarity (The long leg of the capacitor is the positive (+)).

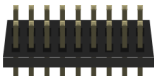
Qty	Value	Code	Name on PCB
12	10uF	10uF	C1, C2, C3, C4, C5, C10, C11, C12, C13, C14, C28, C33

TRANSISTORS

Be sure they are orientated correctly. The curved and flat sides of the silkscreen outline of the transistor on the PCB must match that of the transistor's body.

Qty	Value	Name on PCB
4	2n3904	T1, T2, T3, T4

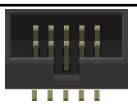
PIN HEADERS



Place and solder the Pin Headers on the Main Board where the silkscreen indicates (It is the shorter pins that you are soldering). Double check they all are perfectly straight.

Qty	PINs	Name on PCB
2	1x3	JP1, JP2
1	2x4	JP3
1	2x6	JP4

POWER CONNECTOR



Solder the power connector at “POWER” ensuring it is facing out from the edge of the PCB.

SOCKET CONNECTORS

Place and solder the socket connectors on the control board where the silkscreen indicates. Double check they all are perfectly straight.

Qty	PINs	Name on PCB
2	1x3	JP102, JP103
1	2x4	JP101
1	2x6	JP100

Mechanical parts are really delicate and will need your full attention. Please read all steps carefully: A MISTAKE FROM HERE WILL UNLEASH A DESOLDERING MAYHEM ON YOU. YOU ARE WARNED.
FRONT PANEL COMPONENTS MOUNTING TIPS:

Now we will proceed to mount potentiometer, switches and LEDs. This part of the assembly is CRITICAL. Please take your time and read the following instructions carefully.

These components must **NOT** be soldered until they are placed on the PCB and fully attached to the front panel.

There are two reasons for this:

> The height of the panel components are not all the same. Because of this, if not attached properly before soldering, they will not stay properly seated against the panel. This might cause mechanical stress reducing their life expectancy and in the worst case cause them to break.

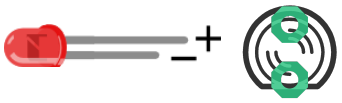
The second reason is that it is very difficult to align the components to the holes if the panel is not positioned prior to soldering. In the case of the LEDs, they are almost impossible to set to the correct height without reference to the front panel.

SWITCH			
Place the switches in their right places. **don't solder them yet!**			
Qty	Type	Name on PCB	Notes
1	Mini. Two circuits two position	S1	Fit the switch to flat to the pcb

POTENTIOMETERS		
Now place the potentiometer on the PCB but... **don't solder them yet!**		
Qty	Type	Name on PCB
2	Dual (6pin) B100k	LEVEL, PHONES_1

MINIJACKS		
Place the mini-jacks on the PCB ensuring they are on the side with the silkscreen but **don't solder them**.		
ty	Value	Name on PCB
1	Stereo jack (green)	PHONES1
14	Mono jack (black)	IN_1_L, IN_1_L1, IN_1_L2, IN_1_L3, IN_1_L4, IN_1_L5, IN_1_R, IN_1_R1, IN_1_R2, IN_1_R3, IN_1_R4, IN_1_R5, OUT_L, OUT_R

LEDs



Place the LEDs onto main PCB minding its polarity, the negative leg should be face the flat side of the silkscreen, but **don't solder them** until the front panel is in place. This is the only way to solder them the right position.

Qty	Type	Name on PCB
2	Red LED	L1, L2
4	Yellow LED	L3, L4, L5, L6
8	Green LED	L7, L8, L9, L10, L11, L12, L13, L14

FRONT PANEL

Attach the **front panel** adjusting the parts one by one if necessary until it fits. At this point a pair of fine tweezers can be helpful.

To Finish:
- Screw in the parts in this order: A) **Mini-jacks** B) **Pots.**
- Ensuring all of the above parts are flush with the panel and both PCB and panel are perfectly parallel. Then you can **finally solder** them!
- Fit the LEDs on the panel holes and solder them

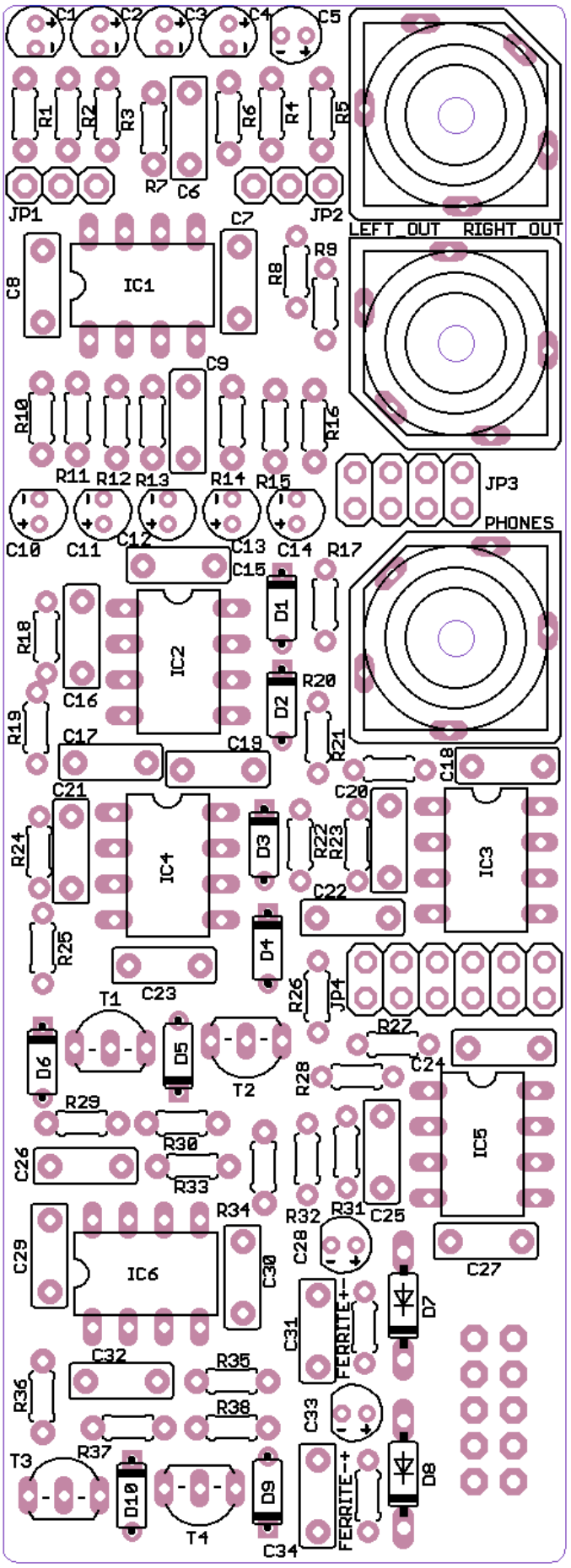
1/4" JACKS AND PCBS ASSEMBLY

- Place the 1/4" jacks over the silkscreen markings but **don't solder them yet.**
- Connect the **MAIN PCB** to the **CONTROL PCB** using the pin headers and screw the jacks to the panel.
- Secure the parts to the panel and then **solder** them to the PCB.

FINISHING

- Put the **knobs** on the potentiometers and the red caps on the Faders.
- Connect the **power ribbon cable**: The red wire (-12V) on the power ribbon cable corresponds to pin number one on the male power connector. The number one pin is indicated with a white line on the main PCB. A white or black line (or "-12v") marked on your power bus normally indicates the corresponding pin.

ENJOY YOUR NEW MODULE!


C1
C2
C3
C4
C5
R1
R2
R3
R7
C6
R6
R4
R5
JP1
JP2
LEFT_OUT
RIGHT_OUT
C7
C8
IC1
R8
R9
C9
R10
R16
R11
R12
R13
R14
R15
JP3
PHONES
C10
C11
C12
C13
C14
R17
C15
D1
R18
IC2
C16
D2
R20
R19
C17
C19
R21
C18
C20
C21
IC4
D3
R22
R23
IC3
R24
C22
D4
R25
C23
T1
JP4
R26
R27
D6
D5
T2
C24
R28
R29
R30
IC5
C26
R33
R34
R32
R31
C25
C28
C29
IC6
C30
C27
C31
FERRITE+-
D7
C32
R35
R36
R38
C33
T3
R37
D10
T4
D9
FERRITE-+
D8
C34